Framework for development of

Oral Health Policy and Strategies in Myanmar

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I. Background

The Republic of the Union of Myanmar, one of the developing countries, is located in Southeast Asia. Myanmar is 676,578 square kilometers in area and the population is 53.58 million in 2017. The average life expectancy of Myanmar people is 66.6 years in male while 69.9 years in female population.

The national representative oral health survey was unknown in Myanmar until 2016. The lack of nation-wide survey might be due to the limited health expenditure in Myanmar (3.38% of general government expenditure). Beside the national survey, only regional surveys could be performed and there have been a few reports in Myanmar.[1-4] The regional survey as pathfinder oral health survey was collected in four large cities in 2006-2007. Therefore, the WHOHQ, WHOCO in Myanmar, WHOCC Niigata University, WHO Experts in Myanmar, the Borrow Foundation and Ministry of Health in Myanmar were collaborated to perform a National Oral Health Survey in Myanmar.

The first National Oral Health Survey in Myanmar was conducted from December 2016 to January 2017. The 43 local dentists examined a total of 6,273 subjects aged 6, 12, 15-19, 35-44, and 60-74 years olds from 23 townships and districts. The final number of status that were included in data analysis was 5,928 and 4,667 for dental caries and periodontal respectively.

II. Findings from National Oral Health Survey

1. Dental caries status

1.1. Dental caries on primary teeth

Only 15.8% of 6 years old group subjects were free of dental caries on their primary teeth. Most of the 6 years old group subjects (98.6%) and all of the mixed dentition age range have their carious primary teeth left untreated. Most of the primary teeth left within the mixed dentition age range were carious. The 12 years old subjects have caries on all of their primary central incisors. Only one child had a ft score of 3 in 6 years old, while no ft score was found in 12 years or 15-18 years old subjects.

1.2. Dental caries on mixed dentition

The 6 years old group subjects have the highest prevalence of caries (primary and permanent teeth). As early as the age of 6 years, the subjects have already got caries on their newly erupted permanent teeth, hence in the older age groups, they have double burden of caries on their primary as well as permanent teeth.

1.3. Dental caries on permanent teeth

More than 90% of all age groups have left their active carious permanent teeth caries untreated. The percentage of carious maxillary and mandibular anterior teeth was low, and conversely for posterior teeth. A higher percentage of caries experience was detected in left mandibular second premolar. First and second molar were found to have the highest percentage of caries experience.

The DMFT score of 6 years old group have a score of 0.14 and 0.11 for male and female respectively. The highest percentile for the age group of 6 years old was 8. There are also subjects from the age group of 6 years old who has an MT score of 2. Within the age group of 35-44 and 60-74 years old, there are some subjects who have maximum DMFT score and also maximum MT score (32 for the highest percentile). The proportion of missing (M) score was considerably higher than decayed (D) and filling (F) for adult age groups. The 60-74 years old group subjects have the highest prevalence of caries (93.6%) to be compared to the other age groups.

2. **Periodontal status**

Less than 50% of all of the subjects involved in this survey had a healthy gingival condition. The pattern between genders was almost similar within all of the age groups. The female subjects have a smaller proportion of periodontal disease than males.

The age group of 12 years old has the least severe periodontal condition while 60-74 years old was most severe. The proportion of teeth with shallow pocket was slightly lessened in younger age groups. It was found that 2.5% of the subjects were suffering from shallow pocket and gingival bleeding with the age group of 15-18 years old. The proportion pattern of subjects with shallow pocket and gingival bleeding between the age groups of 35-44 and 60-74 years old was similar. The highest percentage (77.2%) of gingival bleeding was found in the male subjects within the age group of 60-74 years old. The 60-74 years old group was the only age group which has some proportions of the subjects with deep pocket and gingival bleeding (4.1%). Within the age group of 60-74 years old, it was found that the highest proportion of teeth with shallow pocket (5.5%).

III. Developments for Oral Health Policies and Strategies in Myanmar

Overall Mission

Provision of adequate and effective oral health promotion programs would be essential to improve oral health situation in Myanmar. It should be accomplished by means of performance goals with different time frames, in a way that may lead to better oral health outcomes for Myanmar people.

Goal 1: Establishment of an appropriate monitoring system on oral health

System of regular oral health examination programs such as annual/routine data collection, analysis and reporting of common oral diseases should be developed in various settings.

Specific Objective 1: To establish a system of routine oral examination for pregnant women and children 0-5 years

As there are no routine oral examination programs for pregnant women and children 0-5 years, it is not easy for them to access and receive required oral health care. Therefore, a system of routinely dental examination should be established as a conjunct with general health check-up. In Thailand as a neighbored country, oral health promotion and prevention service for children 0-2 years is integrated with general health promotion program. Children receiving immunization program are transferred for further oral health check-up for hygiene and early stage tooth decay, with a plan for continuous necessary oral health services and care. In children for 3-5 years, oral health check-up is incorporated into other health care in the day care center for 2 times a year.[7] This system is necessary to establish by proposing government authority for approval and financial support in oral health examination to pregnant women and children 0-5 years. The note book/sheet for dental examination should be established for maternal and child care. Public health dentists should have to collaborate with Maternal and Child Care Society to perform routine infant and mother dental examination, and collaborate with Ministry of Social Welfare, Relief and Resettlement for dental examination in preschool children.

Step by step key facts

(Pregnant women and children 0-2 years)

1. Authorized persons from Ministry of Health and Sports
    - Discuss with Maternal and Child Care Society for monitoring oral health in pregnant women and children 0-2 years

- Create a format oral health examination chart including dental caries, periodontal status and oral hygiene for pregnant women, oral hygiene and early stage of tooth decay for children 0-2 years (If possible, establish a maternal and child care general health note book/sheet including oral health examination chart)
- Consider for model townships (for example, select a township in each region or state)

2. Local dentists from Department of Public Health
   - Perform oral examination using a format chart at Maternal and Child Care Centers of selected townships
   - Collect the first year's data by 2020
3. Local public health experts
   - Analyze the collected data (for example, public health experts from universities will analyze the data)
   - Report the first year's data to authorized persons from Ministry of Health and Sports by 2021
4. International supports
   - With the results of first year's data, international experts will support the authorized persons from Ministry of Health and Sports to establish oral health monitoring system

(Children 3-5 years)

1. Authorized persons from Ministry of Health and Sports
   - Discuss with Ministry of Social Welfare, Relief and Resettlement for monitoring oral health in preschool children
   - Create a format dental examination record including dental caries status and oral hygiene
   - Consider for model preschools (for example, select a preschool in each township)
2. Local dentists from Department of Public Health
   - Perform oral examination using a format chart at selected preschools
   - Collect the first year's data by 2020
3. Local public health experts
   - Analyze the collected data (for example, public health experts from universities will analyze the data)

- Report the first year's data to authorized persons from Ministry of Health and Sports by 2021

4. International supports
    - With the results of first year's data, international experts will support the authorized persons from Ministry of Health and Sports to establish oral health monitoring system

Specific Objective 2: To establish an appropriate annual dental examination and data collection system in the school settings

"School health program" has been started with the main responsibility by School Health Division of Department of Public Health.[5] School health team of a township is visiting schools at least once a year. In each school health team, there is usually a public health dentist who is responsible for the performance of school oral health activities. Their main role are conducting dental examination, emergency dental treatments and giving oral health education to school children.

There is still lacking an appropriate system of collection and recording the data of school children in Myanmar. It should be established a system of annual collection and recording data of dental disease prevalence and severity in the school dental service using format dental examination record form. According to the standard procedures and guidelines, the dentist can check the oral health status of all the students for conditions such as dental caries, malocclusion, gingival status, dental plaque and TMJ disorders. Every school children must have their own dental examination chart and so the dentist can easily recognize their pattern and severity of dental diseases. By collecting the data annually, the dentist can compare and adjust the oral health status and oral health care needs of each child. The dentists should have to collect the data of each child, combine the data of each school, analyze and report these annual data.

Step by step key facts

1. Authorized persons from Ministry of Health and Sports
    - Discuss with Ministry of Education for appropriate monitoring oral health in schoolchildren
    - Create a format dental examination record form including dental caries, malocclusion, gingival status, dental plaque and TMJ disorders
    - Consider for model schools (for example, select a school in each township)

2. Local dentists from Department of Public Health
    - Perform oral examination using a format chart at selected schools (with their own chart)
    - Collect the first year's data by 2020
3. Local public health experts
    - Analyze the collected data (for example, public health experts from universities will analyze the data)
    - Report the first year's data to authorized persons from Ministry of Health and Sports by 2021 (What was the progression or the main problem in each school, how do we solve, and what is the future plan, etc.)
4. International supports
    - With the results of first year's data, international experts will support the authorized persons from Ministry of Health and Sports to establish oral health monitoring system

Specific Objective 3: To establish a system of oral health data collection in the hospital settings (adults and elderly)

Oral health division of Department of Medical services is taking responsibility for delivering hospital-based dental services in the country.[6] Hospital-based dentists are mainly providing oral health care services to community people, who seek for emergency treatments at hospitals. Routine dental examination at public hospitals should be mandatory. Therefore, it should be established a system of routine collection and recording data in hospitals using comprehensive patient record form. If oral health problems are detected, necessary oral health services including emergency treatments should be introduced at any public or private dental office. Public health dentists have to take the collaboration with appointed dentists in township level hospitals for monitoring routine oral health care services till grass root level.

Step by step key facts

1. Authorized persons from Ministry of Health and Sports
    - Create a comprehensive patient record using WHO oral health assessment form
    - Consider for model hospitals (for example, select a township hospital in each region or state)
2. Local dentists from Department of Medical Services
    - Perform oral examination using a format chart at selected public hospitals
    - Collect the first year's data by 2020

3. Local public health experts
    - Analyze the collected data (for example, public health experts from universities will analyze the data)
    - Report the first year's data to authorized persons from Ministry of Health and Sports by 2021 (What was the progression or the main problem in each school, how do we solve, and what is the future plan, etc.)
4. International supports
    - With the results of first year's data, international experts will support the authorized persons from Ministry of Health and Sports to establish oral health monitoring system

Specific Objective 4: To conduct a routine National Oral Health Survey

National as well as regional oral health survey should be conducted periodically to monitor oral health trends and needs. Second National Oral Health Survey for key ages should be conducted by 2022 based on WHO Oral Health Survey Basic Method 5th Edition in order to allow monitoring of changes in oral health among Myanmar. The survey should be performed periodically every 5 years.

Step by step key facts

1. Authorized persons will discuss with international experts for planning
2. Local and/or international public health experts will train local dentists for oral health survey
3. Local public health dentists will conduct 2nd National Oral Health Survey by 2022
4. Local public health experts and/or international experts will analyze the collected data and reports to authorities and plan for future oral health promotion programs
5. Repeat the survey every 5 years

<u>Goal 2: Improvement of the quality of routine oral health care services by developing appropriate oral health guidelines and policies for provision of oral health promotion programs</u>

Public oral health services are taking main responsible by the Oral Health Unit of the Department of Medical Services are run based on the national oral health strategies with an emphasis on: (i) strengthening primary oral health care services for rural and remote communities (focusing on the health promotion and education, disease prevention, and provision of basic and emergency oral health care), (ii) the fluoride project (including

prevention of dental fluorosis in endemic areas and promotion of affordable fluoride toothpaste), and (iii) delivery of quality routine oral health care services by hospitals, urban health centers and school health teams.[8] However, there is still a need to address inequalities in oral health care in urban and rural areas of Myanmar. Basic oral health care services should be implemented properly through states and regions of the country till grass root level.

Strengthening strategic coordination and collaboration among multi-sectorial stakeholders is an important way to promote community's oral health.[9] Therefore, it is strongly need to develop a formal set of oral health guidelines and policies based on oral health data that previously collected in various sectors. By using the data that obtained from data collection and data analysis, it is important to notify what kind of preventive strategies would be provided to the community. This should be considered for prevention of all types of oral diseases as well as common risk factors. System of oral health care services including oral health education, prevention and promotion programs should be provided for community such as children 0-5 years, school children, adults and elderly people separately.

Specific Objective 1: To establish/improve oral health promotion program for pregnant women and children 0-5 years

Early childhood caries is currently a serious oral health problem in Myanmar. Previous study has shown that caries prevalence of preschool children in Yangon city was about 83% with mean dmft of 6.4.[10] Recently, the Oral Health Unit of the Department of Health introduced oral health promotion activities for preschool children entitled with "Early Childhood Caries Prevention Program". It is mainly focused on correct tooth brushing activities in below 5-year-old children and giving oral health education to caregivers through collaboration with the Ministry of Social Welfare, Relief and Resettlement. This program should be developed as routine and constant nation-wide program in the future.

The Oral Health Unit should be major concerned with addressing the tooth decay problem among children as it may pose adverse effect on children's oral health, general health and their quality of life. It is also necessary to develop a policy to prevent and control tooth decay among the childhood by setting a national indicator in Myanmar. In line with this national indicator, oral health care services should be provided including oral health checkup, skill trainings on tooth brushing for caregivers, receiving fluoride varnish application or other suitable forms for children with high risk caries. There is also a need for development of oral health care services for pregnant women and children 0-2 years through the collaboration

with Maternal and Child Care Society. Children receiving immunization program should be conjunct with oral health care services.

Step by step key facts

1. With established oral health monitoring system, local public health dentists will perform routine oral examination in various settings through the country
2. International experts will discuss with local authorities to develop relevant oral health guidelines and policies for oral health promotion programs
3. Local authorities will discuss with Maternal and Child Care Society (pregnant women, 0-2 years) and with Ministry of Social Welfare, Relief and Resettlement (3-5 years) for oral health care services in respective settings
4. Local dentists (public health dentists and hospital-based dentists) provide oral health care services in respective settings

4.1. Oral health care services for pregnant women, children 0-2 years

The services should be integrated by local dentists at maternal and child care centers.

(Oral examination)

- With established maternal and child care general health note book/sheet including oral health examination chart, oral check-up for hygiene and early stage tooth decay will be performed in children who will come to maternal and child care centers for immunization programs.
- Plan and advice parents for continuous oral health service and care.
- For pregnant women, it should be emphasized on periodontal examination and oral hygiene instruction, as well as necessary treatments (plan it during pregnant or after labor).
- Necessary oral health services and care will be received at public hospitals (by hospital dentists)

(Oral health education)

- Maternal Oral Health Education Program together with oral health services for pregnant women should be implemented to improve overall maternal and child health.
- Advice the pregnant women for key oral hygiene care (for example, key oral health messages to pregnant women should be included as followed.)

① Brush teeth twice daily with a fluoride toothpaste and mouth rinsing after meals

② Limit foods containing sugar to mealtimes only

③ Choose water or low-fat milk as a beverage. Avoid carbonated beverages during pregnancy

④ Choose fruit rather than fruit juice to meet the recommended daily fruit intake

- Train the pregnant women for self-periodontal check-up (for example gingival color, contour and any signs of gingival bleeding, etc. If positive signs of gingivitis occurred, consult with hospital dentists for necessary oral health care services.)
- Advice and train the parents how to clean and brush their child's oral cavity. (for example, advice the parents the following key messages.)

① Prepare a piece of gauze, cotton or cloth and a glass of drinking water

② Wash your hands thoroughly with soap

③ Wrap the gauze, cotton or cloth around your finger and damp it with water

④ Gently put your finger inside your baby's mouth. Wipe the upper and then the lower gum pad once

(Fluoride program)

- Children with any white sport found should receive any fluoride application such as fluoride varnish or other suitable forms, with follow-up appointments until 3 years old.

4.2. Oral health care services for children 3-5 years

- Early Childhood Caries Prevention Program should be developed as nation-wide routine and constant program in Myanmar.
- The services should be integrated by local dentists at preschools.

(Oral examination)

- With established a format dental examination record form for preschool children, oral health checkup by public health dentists for at least once a year.
- Inform parents for their children's oral health status and advice for necessary treatments
- Necessary treatments except school-based programs will be received at public hospitals (by hospital dentists)

(Oral health education)

- As lunch is providing by government in preschools, supervision of dietary control is keenly important.
- Mainly focus on regular tooth brushing with active motivation to preschool children by means of poems, stories, etc.
- Oral health education aiming at positive behavioral changes including dietary habits should be provided to parents, guardians and preschool teachers.
- Adequate oral hygiene practice should also be provided. If possible (second priority), collaborate with Ministry of Social Welfare, Relief and Resettlement to establish "Campaign for Tooth Brushing after Lunch" in preschools.
  - ① Each child will need to support for the presence of toothbrush and toothpaste
  - ② Toothbrush and toothpaste should be additionally distributed every three months
  - ③ There must be a clean environment to store their own toothbrush at preschools or they will be asked to bring back home and take it everyday
  - ④ Specific time should be decided after meal and supervised by trained nursing teachers

(Fluoride program)

- Preventive measures such as topical application of fluoride varnish should be used on sound teeth and early white spot lesions.
- Active caries treatment such as use of silver diamine fluoride is necessary. Silver diamine fluoride should only be applied to active enamel caries and early dentine carious lesions. GI sealants can also be applied to early dentine carious lesions.
- SMART/ART should be applied to open cavitation lesions.

Specific Objective 2: To establish/improve oral health promotion programs for school-children

In many countries, dental specialists (dentists and dental hygienists) and school teachers spend lots of time in promoting children's oral health. In Thailand, oral health prevention and promotion in school-age children has long been implemented continuously under the structured framework using key strategies.[11] In Vietnam, the School based Dental Program (SDP) was implemented in collaborative work with Ministry of Health and Ministry of Education and Training. The SDP is mainly operating oral health education, fluoride

mouth rinsing and tooth brushing, clinical prevention and fissure sealants to primary schools all over the country.[12] It should also be implemented well organized school-based oral health promotion programs in Myanmar.

2.1. Oral Health Education Program

The result of this survey suggested that oral health promotion programs should include effective oral health education for improving dental awareness. Oral health education is a fundamental and very common approach, whereas effective oral health education could establish good oral health behaviors and habits by enhancing a person's oral health knowledge.[13] Although knowledge was just improved unless attitude or practice improvement, oral health education could not be effective enough for oral health promotion in Myanmar.

In every school, at least a teacher should be trained in school health activities, and he or she will be responsible to make joint activities with school health team of the respective township. Public health dentists, nursing teachers and classroom teachers should be involved in conducting oral health education. Moreover, oral health education for children should be involved in a routine curriculum by classroom teachers and school nursing-teachers. The type and extent of oral health education program is dependent on the individual school's needs, problems, curriculum and timetable. Generally, school nursing teachers will teach schoolchildren how to brush their teeth properly, highlight the importance of oral health for students and how to protect themselves. As dental caries in children is very high in Myanmar, nutritional guidance of limiting snacking sweet foods, drinks and regular dietary patterns should be mainly focused in the educational interventions. Government is expected as a key role to take the initiative and to act in developing and implementing oral health promotional strategies, with support from health care professionals and relevant organizations.

Step by step key facts

1. Authorized persons from Ministry of Health and Sports (with international supports)
    - Develop an appropriate oral health education framework based on previous data
    - Develop the education materials (for example, education poster will be developed and pasted in the classrooms)
    - Public health experts will share knowledge to local public health dentists about effective oral health education with the following information included:
        ① Use correct tooth brushing technique
        ② Brush twice a day with fluoride tooth paste (before immediately bed time and after breakfast)

③ Choice of tooth brush and amount of fluoride tooth paste

④ Brushing time (minimum of two minutes)

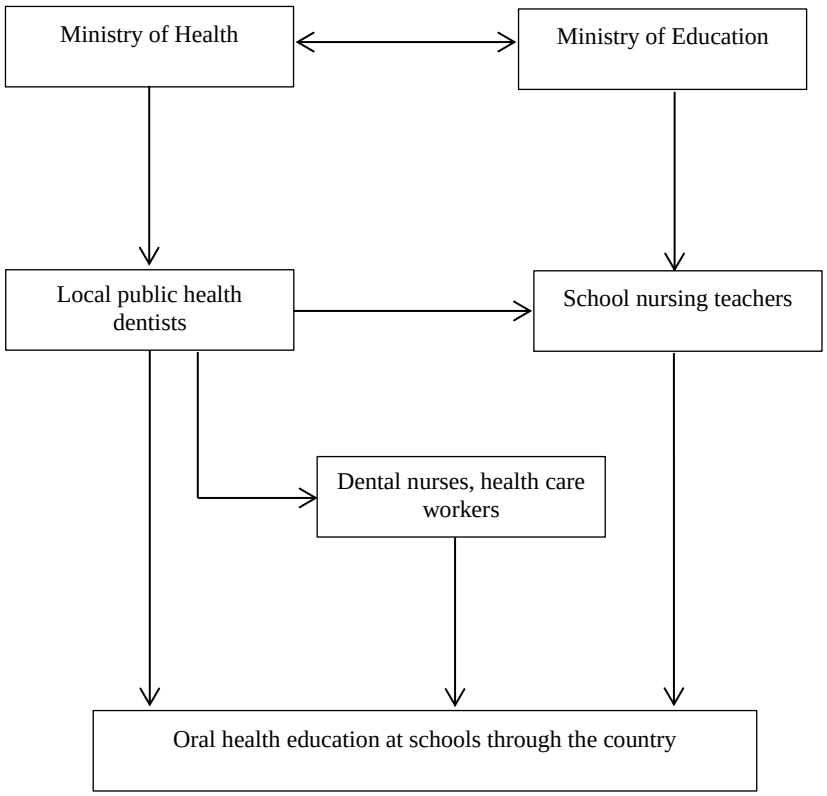
⑤ Spit out well after brushing, but minimize rinsing behaviors with water

- Cooperate with Ministry of Education to form school oral health education team
- Oral health education schedule involve in a school curriculum (government)

  Appropriate tooth brushing with adequate fluoride toothpaste should be actively educated in schools.

2. Local dentists from Department of Public Health
   - Branch training from dentists to dental nurses, assistants and health care workers
   - Ask at least a teacher from each school for school oral health education team
   - Oral health education trainings to selected nursing teachers
   - Local dentists will give oral health education to schoolchildren at least once a year (if possible twice a year) in a township level
   - Dental nurses or community health care workers will give oral health education to schoolchildren at least once a years in a rural/village level
   - School nursing teachers will train oral hygiene care and oral health education to schoolchildren with scheduled timetable (for example, once a week)
   - Set up school oral health education teams

School Oral Health Education Team


Ministry of Health
Ministry of Education
Local public health dentists
School nursing teachers
Dental nurses, health care workers
Oral health education at schools through the country

School-based Fluoride Programs

Base on the national oral health survey, the subjects have already got caries on their newly erupted permanent teeth as early as the age of 6 years. Therefore, various school-based fluoride programs should be developed with the support of government and non-governmental organizations.

Fluoride mouth rinsing program

It is recommended for caries prevention and reduction dental caries inequalities among schoolchildren, and FMR under supervision also frequently has been used in school-based programs to prevent dental caries in children. FMR usually oriented for preschool children, primary school children and junior high school children with different frequency and concentrations, which has contributed to caries prevention of permanent teeth. Supervised regular use of FMR by children and adolescents is associated with a large reduction in dental caries development. WHO documented that FMR should only be used for 6-years-old children and above due to concerns about dental fluorosis. On the other hand, first permanent molars already erupted at the age of 6, and it might be delayed to prevent dental caries occurrence for first permanent molars in 6-years-old. So, measurements for FMR uses among preschool children were performed in Japan, and reported FMR could be performed by preschool children safely and efficiently.[14]

Step by step key facts

1. Authorized persons from Ministry of Health and Sports (with international supports)
    - First step is to attempt for easily available in local markets
    - Training programs to local dentists for effective FMR methods
2. Local dentists from Department of Public Health
    - Branch trainings to school nursing teachers, dental nurses, assistants and health care workers
    - Practice the initial mouth rinsing with water in schoolchildren to avoid swallowing or left over in cups
    - Implement 10ml 0.2% sodium fluoride mouth rinse weekly under supervision of school nursing teachers at schools
    - Start fluoride mouth rinsing from grade 1 primary schoolchildren and continue until end of middle school

Clinical application of sealants or fluoride varnish

- Perform annual dental examination with established format dental examination form
- Clinical application of sealant or fluoride varnish should be used in children who need preventive measures in the school settings

(Resin-based sealants or GIC protective coatings)

It should be applied to the first permanent molars (once they have fully erupted) of 5- and 6- year-old children who have

- one or more primary teeth missing due to caries,
- three or more filled primary teeth, or
- deep, sticky and retentive fissures on their first permanent molars.

(Fluoride varnish applications)

Topical fluoride varnish applications should be used in schoolchildren on early smooth-surface lesions on

- permanent teeth or
- deciduous teeth which have at least two years remaining prior to exfoliation.

(Silver diamine fluoride applications)

Active caries treatment such as use of silver diamine fluoride is necessary. Silver diamine fluoride should only be applied to

- active enamel caries of deciduous teeth or
- early dentine carious lesions of deciduous teeth.

(SMART/ART)

It is also considered to be an alternative method of restorative treatment of primary tooth in school-based environment. Simply remove dental caries, minimal cavity preparation using only hand instruments and fill it with glass ionomer cement. It is suitable to apply in

- open cavitation lesions (involving dentine),
- accessible to hand instruments, or
- one surface more than multiple surface cavities.

After lunch tooth brushing program

In 2013, Live-Learn-Laugh Project (LLL project) was successfully established with the joint cooperation of Myanmar Dental Association, FDI and Unilever. According to these results, after lunch tooth brushing would be beneficial to reduce prevalence and incidence of oral diseases among the school children. Therefore, "Campaign for Tooth Brushing after Lunch" should be re-performed at model schools and then developed nation-wide in the future.

2.2. Clinical Prevention (Early Treatments)

Clinical preventive activities consist of periodic oral examinations and early treatment for emergency dental care in schoolchildren.

Step by step key facts

1. Public health dentists will go to schools for oral examination (with established oral examination form) at least once a year
2. Refer to public health centers or hospitals for necessary treatments except school-based fluoride programs
3. If possible (second priority), collaborative work with public health dentists and hospital dentists. Provide early treatments such as deciduous teeth extraction, ART, scaling, etc. in the school settings

Specific Objective 3: To establish/improve oral health promotion programs for adults (including elderly)

Based on this survey, dental caries status and periodontal status were severe in both 35-44 years and 65-74 years age groups. The 60-74 years old group subjects have the highest caries prevalence as well severe periodontal disease to be compared to the other age groups. People awareness on oral diseases seems to be still poor and their oral health literacy is low. Accordingly, their oral health behaviors as well as status are inadequate. These factors may be attributed to increase prevalence of dental caries and periodontal disease in Myanmar. Therefore, prompt and adequate preventive strategies and measures should be implemented for Myanmar people.

Nowadays, it is moving toward an aging society worldwide and also expected to be aged society in future in Myanmar. A higher proportion of elders cause higher prevalence of

oral diseases with common risk factors and need more complexity care than the younger. Tooth loss is the main oral health problem in aging population and related with eating, chewing and swallowing inabilities, affected to poor nutrition, unhealthy and low quality of life. Therefore, oral health programs for aging population related with improved quality of life should be considered.

3.1. Oral Health Education

Oral health education pamphlet and video programs were telecast on the national TV program.[1] It is also performing by dental public health section of Myanmar Dental Association and joint dental public health activities with international organizations such as JICA, IADR, ICD, etc. In education, motivation is more important than informing the people. Simply education is not enough and so, the most important thing is to use effective and motivational education approach instead of traditional education approach in the future nationwide. It is necessary to involve local leaders as people learn the best from whom they respect and regard. Further, education strategies (based on previous data) should be considered with different purposes in community.

For example,

- Focus on the dietary control, fluoride use, oral hygiene care, etc. for caries-risk community
- Focus on regular tooth brushing, nutrition guidance, oral hygiene care, etc. for periodontal disease-risk community
- Focus on restriction of fluoride uses for high fluoridated areas
- Focus on betel quid chewing, oral cancer awareness, making tobacco free zone in public areas, etc.

Step by step key facts

1. Local dentists from Department of Public Health
    - Branch training to dental nurses, assistants and health care workers
    - In addition to institutionalized services, local public health dentists together with dental nurses and community health care workers will go to community until grass root level
    - Give oral health education to community people at rural health centers

- Involvement of local authorized persons (i.e. head of a village, religious leaders such as monk)
- Set up community-based oral health education teams
    - Local dentists, dental nurses, community health care workers
    - Local leaders
    - Village health volunteers

2. Authorized persons from Ministry of Health and Sports
    - Continue national TV programs through the country (oral health messages for common oral diseases as well as oral cancer awareness)

3.2. Oral health care services

- Oral health care of Myanmar people is mainly providing by private practitioners. So, private sector is also important, the general practitioners should provide not only dental treatments but also oral health check-up. It is necessary to persuade the patient for recall visits and regular oral health check-up.
- It is also necessary to improve oral health care services in hospitals by actively providing efforts in urban areas, rural areas, remote areas
- Continue outreach activities of Myanmar Dental Council, Myanmar Dental Association and other international organizations (with emphasis on preventive procedures)

Oral health care services for elderly

If a person who lose their teeth, it would be difficult to enjoy food and make them feel unhappy, mental health is ill and lost their quality of life. So, it should be covered denture services and preventive services for root caries in community outreach activities all over the country. Oral health programs for institutionalized elderly (elderly care centers, nursing home) should also be designed to improve their oral health status. Oral health care services such as oral examination, emergency treatments and oral prophylaxis should be provided. Oral hygiene care such as tooth brushing to elderly should be supervised or performed by nurse-aids and caregivers. In Thailand, the Bureau of Dental Health offered a development program for elderly club to arrange the activities for oral health promotion of members. It is necessary to initiate new approach to oral health care system for elderly (such as elderly club) on selected townships, and then gradually expand to nationwide.

1. Charity dentist groups
    - Provide denture services in community field trips
    - Provide root caries preventive services (silver diamine fluoride, fluoride mouth rinse, sealants) for elderly in community field trips
2. Local dentists from Department of Public Health
    - Routine oral health care delivery for institutionalized elderly (nursing home, elderly care centers)
3. Local dentists from Department of Medical Services
    - Support and contribute the current oral health care efforts in hospitals (including dentures, fixed prosthesis, etc. for elderly)
4. Authorized persons from Ministry of Health and Sports
    - Initiate elderly club and activities groups in selected townships and expand gradually nationwide
    - Arrange various activities including oral health care

3.3. Community fluoridation programs

- There is still lacking information about community fluoridation in Myanmar. So, it is necessary to update the information on the fluoride content of water supplies.
- Provide the most appropriate fluoridation method in community
  For example, water fluoridation to public water system in selected townships. Then, evaluate their oral health status after 5 years.
- There is still no special fluoride mouth rinse program in Myanmar. Therefore, (if possible) it should be initiated some fluoride mouth rinse program such as home care use for adults and elderly.
- Authorized persons should evaluate the fluoride contents of locally available fluoride toothpastes and strictly perform to add accurate fluoride content in toothpastes.

3.4. Oral Cancer Awareness Program

Among the subjects involved in the survey, some subjects were indicated to have oral cancer by the examiners. Areca/betel nut chewing habit was commonly found within some traditional ethnics, in Myanmar. Since 2013, the special interest group of oral medicine and oral pathology initiated the “Oral Cancer Awareness Program” by screening among tobacco and betel quid consumers at suburban and rural areas.[14] Myanmar is one of the highest prevalence in tobacco consumption countries with an increasing trend. As betel quid chewing habits are widely spread in Myanmar, it should be necessary to widely motivate people for

oral cancer awareness nationwide. Further, government should be initiate the public restrict areas for tobacco smoking and chewing.

Step by step key facts

1. Authorized persons from Ministry of Health and Sports
    - Government should initiate public restrict areas for tobacco smoking and betel quid spitting with some punishments
    - Training to local dentists for oral cancer screening methods
    - Active programs in oral cancer awareness month
2. Local dentists
    - Oral cancer screening should be widely performed at public hospitals (by hospital dentists)
    - Oral cancer awareness messages should be developed nationwide (by public health dentists)

Specific Objective 4: To establish public health insurance system

As there is no universal health coverage in Myanmar, it is also a big threat for people to cure effectively even though they know treatment is actually needed. Installment of health insurance scheme (national/private) can be considered to reduce future incidence and prevalence of common oral diseases in Myanmar.

Step by step key facts

1. Authorized persons should have to report to government for developing public health insurance system
2. With international supports, plan and develop the mandatory health insurance system (e.g. deduction of some amount of salary for performing health insurance)

<u>Goal 3: Develop oral health human resources development plan</u>

Specific Objective 1: To increase the numerous qualified oral health personnel who aid various oral health promotion programs with future perspectives

Dental human resources are very limited in Myanmar compared with WHO standard. There are only 3695 dentists (2014) and the number of dentist per population ratio is 6.8 per 100,000 populations in Myanmar. Regarding the dental education, there are only two dental schools (both are nationals) in Myanmar, while 10 dental schools (8 public and 2 private) in Thailand, 7 public dental schools in Vietnam. As the role of oral health professionals is to

support the community people for a leading outcome and better process of health promotion, increment of dental human resources is keenly important for better oral health situation in Myanmar. Therefore, it is necessary to develop new dental schools (public or private) in Myanmar. Further, there is still limited number of teaching staffs in dental universities.

In townships without school health teams, township medical or dental officer is taking the duties for school health affairs. It is necessary to appoint public health dentists in every township in Myanmar. Public health dentists take main responsibility for monitoring routine oral health care services through the country. There is no dental hygienist in Myanmar. Currently, limited number of the dental nurses is producing by Universities of Dental Medicine in Myanmar. Those dental nurses are appointing at public hospitals for assisting the duties and responsibilities of public dentists. It is still necessary to develop capacity of the dental nurses to be able to practicing such as emergency dental care and preventive fillings etc, especially in rural areas, to offer available dental services.

Key facts (teaching)

1. Develop the number of qualified teaching staffs in dental universities
2. Authorized persons have to propose the government for development of new public dental schools, private dental schools
3. Train the dental students with intensive courses

Key facts (public health and medical services)

1. Increase the number of public health dentists
2. Available of the dentists and/or oral health personnel to grass root level of community (special offers to those dental workers)
3. Promote the number of dental nurses and appoint to every public hospital
4. Format dental workforce system should be developed in every township. (e.g. at least a public health dentist, a hospital dentist, a dental nurse in each township)

Specific Objective 2: To train oral health personnel

For contributions of oral health education and preventive procedures to the community, the dentists, dental nurses and dental assistants should be trained and guided routinely as part of their continuing education. This is an urgent need to ensure adequate and appropriate continuing dental education in preventive dentistry.

Key facts

1. Ensure adequate and appropriate continuous education in dental public health
2. Advanced studies, trainings and/or hand-on courses to the dentists, dental nurses and dental assistants by means of free and/or low cost (*not only to government staffs but also to private dentists)
3. Training of basic dental treatments (such as scaling, ZOE dressing, etc.) to community health workers
4. Attendance of continuous dental education by means of point system
5. Point system will be aid for consideration of dental license extension, foreign trainings and promotions

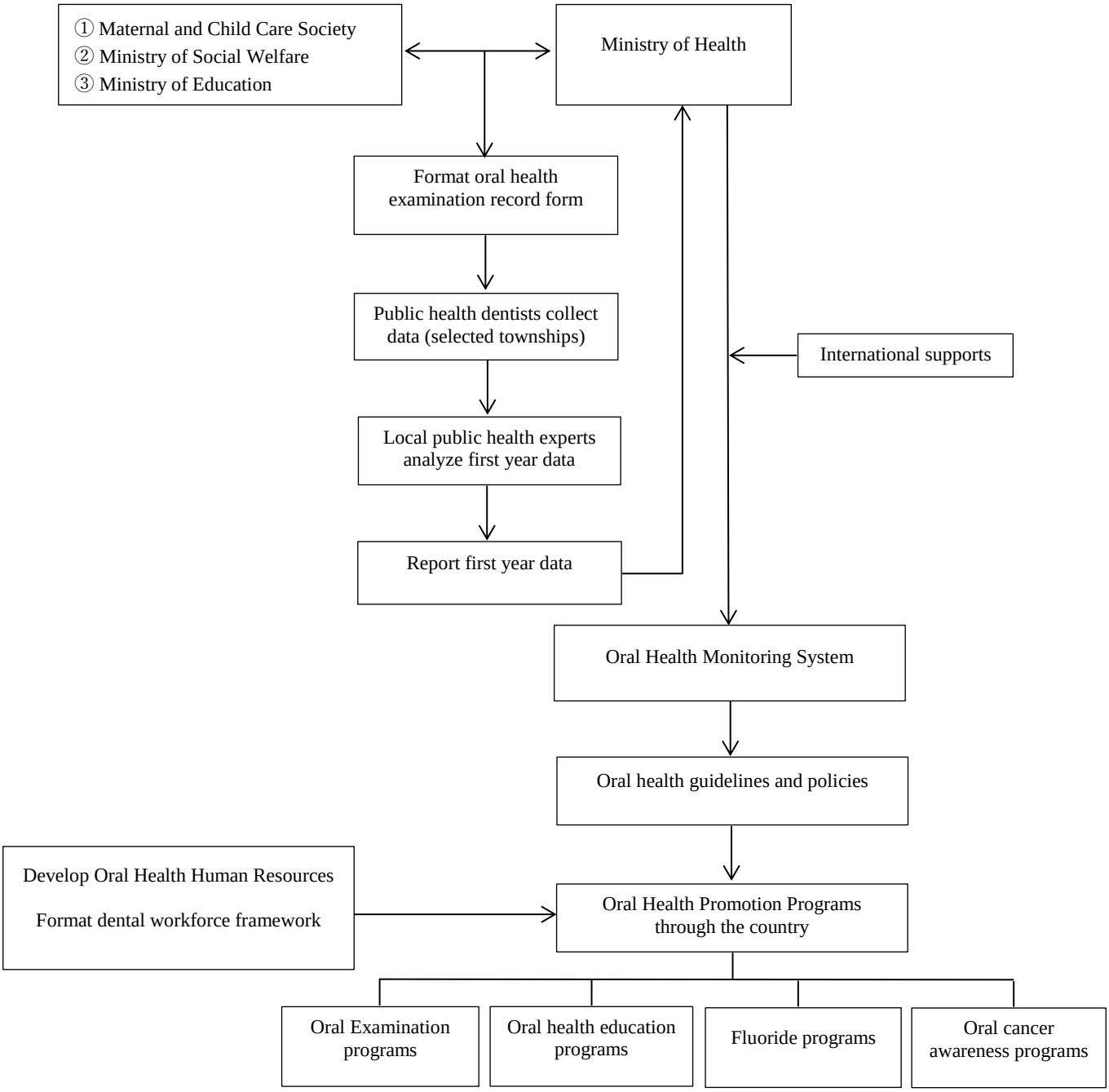
Specific Objective 3: To involve public health experts in national level

- The government need to empower the dental workforce by their direct involvement and participation in the national level oral health policy formulation, implementation and planning to overcome oral health challenges.
- Public health experts will format dental workforce framework with assigned role and action of dentists in various sectors (public health dentists, hospital dentists, university dentists, MDA, MDC, private dentists)
- This is critical for appointing and active participation of dental public health specialists in the national level in order to ensure that the steps being taken currently and to develop further oral health betterment in Myanmar.

Summary

1. Multi-sector collaborative works with other ministries and organizations should be performed.
2. Format dental examination record forms should be urgently implemented in various settings.
3. A national oral health database should be established which can be accessible in various ways.
4. Routine national oral health survey should be conducted every 5 years.
5. An appropriate oral health guidelines and policies for provision of oral health care services should be developed in various settings.
6. A formal dental workforce framework should be conducted.
7. Dental human resources should be developed for various oral health care programs in Myanmar.
8. Routine basic oral health care services should be implemented properly through states and regions of the country.
9. Adequate and appropriate continuing dental education in dental public health should be developed.
10. The government needs to empower the dental workforce by their direct involvement and participation in oral health policy formulation, implementation and planning to overcome oral health challenges.
11. Well-trained dental public health specialist is necessary to ensure the steps being taken currently and develop further oral health care programs in Myanmar.

Summary Flowchart


① Maternal and Child Care Society
② Ministry of Social Welfare
③ Ministry of Education
Ministry of Health
Format oral health examination record form
Public health dentists collect data (selected townships)
International supports
Local public health experts analyze first year data
Report first year data
Oral Health Monitoring System
Oral health guidelines and policies
Develop Oral Health Human Resources
Format dental workforce framework
Oral Health Promotion Programs through the country
Oral Examination programs
Oral health education programs
Fluoride programs
Oral cancer awareness programs

Missions to be considered with different time frames (emphasis within 3 years)

Term	Short term		
	1 (2019)	2 (2020)	3 (2021)
Goal 1: Oral health monitoring system			
1.1. Pregnant women and children 0-2 years	-Discuss with Maternal and Child Care Society -Establish maternal and child care book included oral examination chart -Select model townships	-Collect the data at selected townships	-Combine, analyze and report the first year's data
1.2. Children 3-5 years	-Discuss with Ministry of Social Welfare -Establish format record form -Select model preschools	-Collect the data at selected preschools	-Combine, analyze and report the first year's data
1.3. Schoolchildren	-Discuss with Ministry of Education -Establish format record form -Select model schools	-Collect the data at selected schools	-Combine, analyze and report the first year's data
1.4. Adults and Elderly	-Establish comprehensive patient record in hospitals (if possible, record form for institutionalized elderly) -Select model hospitals	-Collect the data at selected hospitals and (if possible, at elderly institutions)	-Combine, analyze and report the first year's data
Goal 2: Routine oral health care services			-Plan for public health insurance system -Discussion with international experts to set up guidelines and policies and assign for oral health programs
Goal 3: Human resources Development		-Increase the number of dentists -Involve well-trained dental public health specialists in national level -Plan for dental workforce framework	-Ensure trainings for ongoing oral health care programs -Special trainings -CDE with point system

Missions to be considered with different time frames (emphasis within 6 years)

Term	Middle term		
	4 (2022)	5 (2023)	6 (2024)
Goal 1: Oral health monitoring system	**-National Oral Health Survey** -Collect routine data through the country -Establish a national oral database	-Analyze and report the data of NOHS - Analyze and report the annual data	-Continue routine data collection through the country
Goal 2: Routine oral health care services	-Start public health insurance system		
2.1. Pregnant women and children 0-2 years	-Oral health education to mothers and pregnant women -Fluoride program	-Continue oral health care services	-Continue oral health care services
2.2. Children 3-5 years	-Training to preschool teachers -Oral health education -Fluoride program	-Continue oral health care services	-Continue oral health care services
2.3. Schoolchildren	-Develop education materials and train to school teachers and educate to children -Fluoride programs and early treatments		
2.4. Adults and Elderly	-Public education (e.g. TV program) -Education through local leaders -Oral cancer awareness program	-Continue oral health care services	-Continue oral health care services
	-Oral health care services through hospitals, field trips and elderly home -Prosthesis for elderly -Community fluoridation programs	-Continue oral health care services -Initiate the elderly club in selected townships (if possible)	-Continue oral health care services -Spread the elderly club through the country (if possible)
Goal 3: Human resources Development	-Consider for new dental schools -Special trainings, CDE with point system	-Consider for new dental schools -Special trainings, CDE with point system	-Consider for new dental schools -Special trainings, CDE with point system

Missions to be considered with different time frames (emphasis within 10 years)

Term	Long term			
	7 (2025)	8 (2026)	9 (2027)	10 (2028)
Goal 1: Oral health monitoring system	- Continue routine data collection through the country	- Continue routine data collection through the country	**-National Oral Health Survey**	-Evaluation
Goal 2: Routine oral health care services	-Continue oral health care services	-Continue oral health care services	-Continue oral health care services	-Evaluation
Goal 3: Human resources Development	-Special trainings, CDE with point system	-Special trainings, CDE with point system	-Special trainings, CDE with point system	-Evaluation

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